

# MGFC38V6472

## 6.4~7.2GHz BAND 6W INTERNALLY MATCHED GaAs FET

### DESCRIPTION

The MGFC38V6472 is an internally impedance-matched GaAs power FET especially designed for use in 6.4~7.2 GHz band amplifiers. The hermetically sealed metal-ceramic package guarantees high reliability.

### FEATURES

- Class A operation
- Internally matched to 50Ω system
- High output power  
 $P_{1dB} = 6W$  (TYP) @ 6.4~7.2GHz
- High power gain  
 $G_{LP} = 9$  dB (TYP) @ 6.4~7.2GHz
- High power added efficiency  
 $\eta_{add} = 31\%$  (TYP) @ 6.4~7.2GHz,  $P_{1dB}$
- Hermetically sealed metal-ceramic package
- Low distortion [Item: -51]  
 $IM_3 = -45$  dBc (TYP) @  $P_o = 27$  (dBm) S.C.L.

### APPLICATION

- Item-01: 6.4~7.2GHz band power amplifier
- Item-51: Digital radio communication

### QUALITY GRADE

- IG

### ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Symbol	Parameter	Ratings	Unit
$V_{GDO}$	Gate to drain voltage	-15	V
$V_{GSO}$	Gate to source voltage	-15	V
$I_D$	Drain current	5.0	A
$I_{GR}$	Reverse gate current	-15	mA
$I_{GF}$	Forward gate current	31.5	mA
$P_T$	Total power dissipation *1	30	W
$T_{ch}$	Channel temperature	175	°C
$T_{stg}$	Storage temperature	-65 ~ +175	°C

\*1:  $T_c = 25^\circ C$

### ELECTRICAL CHARACTERISTICS (Ta = 25°C)

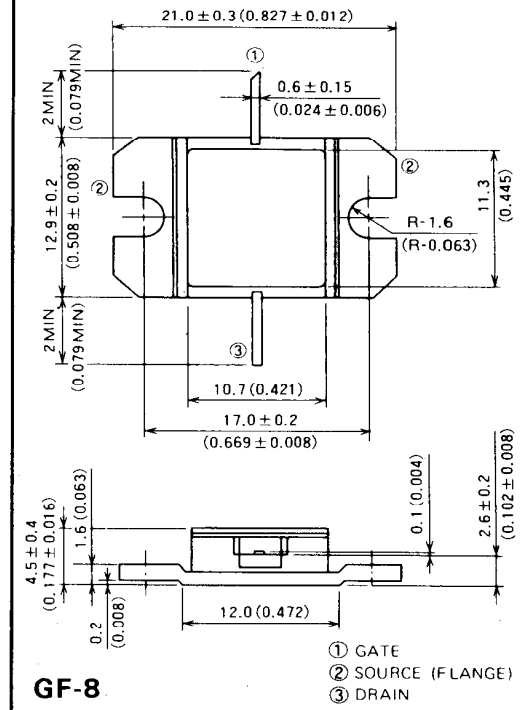
Symbol	Parameter	Test conditions	Limits			Unit	
			Min	Typ	Max		
$I_{DSS}$	Saturated drain current	$V_{DS} = 3V, V_{GS} = 0V$	—	—	5.0	A	
$g_m$	Transconductance	$V_{DS} = 3V, I_D = 1.5A$	—	2	—	S	
$V_{GS(off)}$	Gate to source cut-off voltage	$V_{DS} = 3V, I_D = 15mA$	—	-3.5	-5.0	V	
$P_{1dB}$	Output power at 1dB gain compression	$V_{DS} = 10V, I_D = 1.8A, f = 6.4 \sim 7.2GHz$	37	38	—	dBm	
$G_{LP}$	Linear power gain		8	9	—	dB	
$I_D$	Drain current		—	1.7	—	A	
$\eta_{add}$	Power added efficiency		—	31	—	%	
* $IM_3$	3rd order IM distortion *1		-42	-45	—	dBc	
$R_{th(ch-c)}$	Thermal resistance *2		$\Delta V_f$ method	—	—	5.0	°C/W

\*1: Item-51, 2-tone test  $P_o = 27$  dBm Single Carrier Level  $f = 7.2GHz$   $\Delta f = 10$  MHz.

\*2: Channel to case

### OUTLINE DRAWING

Unit: millimeters (inches)

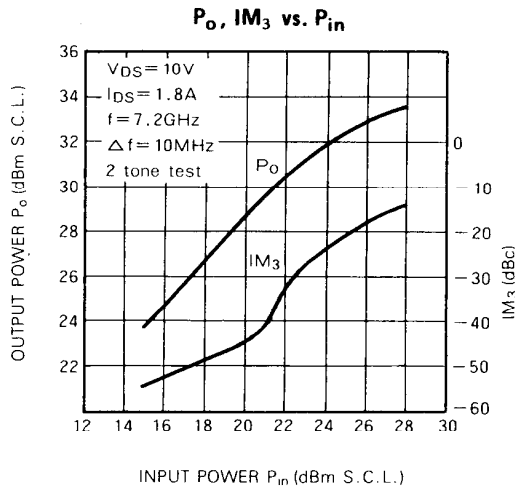
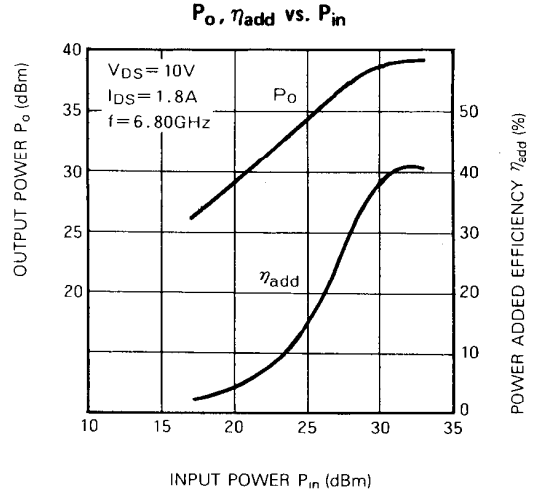
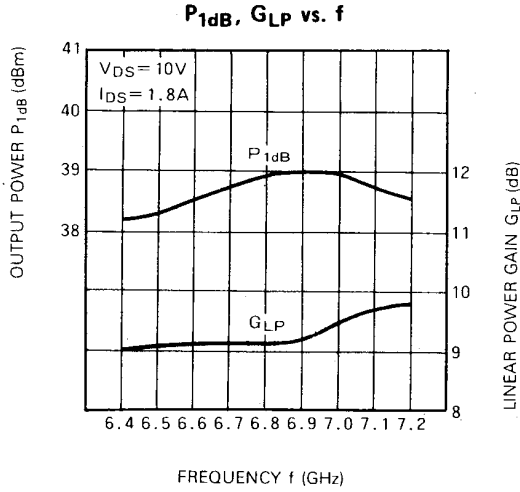


### RECOMMENDED BIAS CONDITIONS

- $V_{DS} = 10V$
- $I_D = 1.8A$
- $R_g = 100\Omega$
- Refer to Bias Procedure

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**TYPICAL CHARACTERISTICS** (Ta=25°C)



**S PARAMETERS** (Ta=25°C, V<sub>DS</sub>=10V, I<sub>DS</sub>=1.8A)

f (GHz)	S Parameters (TYP.)							
	S <sub>11</sub>		S <sub>21</sub>		S <sub>12</sub>		S <sub>22</sub>	
	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)	Magn.	Angle (deg.)
6.4	0.56	154	2.86	-47	0.049	-91	0.15	-172
6.5	0.52	142	2.96	-64	0.051	-105	0.17	148
6.6	0.45	131	2.94	-80	0.053	-123	0.21	128
6.7	0.39	123	3.01	-97	0.059	-138	0.27	106
6.8	0.30	119	3.02	-115	0.062	-155	0.30	89
6.9	0.25	126	2.98	-134	0.071	-171	0.31	76
7.0	0.21	143	2.91	-153	0.070	170	0.30	57
7.1	0.24	153	2.84	-166	0.070	161	0.28	44
7.2	0.33	161	2.68	174	0.063	138	0.26	30

MITSUBISHI SEMICONDUCTOR <GaAs FET>

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MITSUBISHI  
ELECTRIC

June/2004